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occupied by 2 to 4 different species are plotted. These things, together with the convenient size of the volume, make the book, in spite of its evident defects, a desirable addition to our non-technical botanical handbooks.—GEO. D. FULLER.

### Texts on colloid chemistry

The plant is made in the main of colloids. Notwithstanding this fact, until recently, so far as we have tried to explain its activity on the chemical basis at all, it has been largely in accordance with laws of homogeneous systems. Lately we are coming to realize that the laws of colloids are of first importance in answering many questions concerning the plant, its environment, and the interrelation of the two.

With the translation of the first half of OSTWALD'S *Grundriss der Kolloid-chemie*<sup>2</sup> we have an excellent statement of a portion of the principles of the subject available in English. OSTWALD was turned into colloid chemistry by certain problems met in biology, and the translator is an animal physiologist dealing with very fundamental problems in the colloidal side of his subject. These facts should especially interest biologists in the book. It is to be regretted that the second half has not yet appeared in German, and is therefore not available for translation; but one sees the rapidity of the growth in colloid chemistry when he recognizes that the first half passed through three editions without opportunity for writing the second half.

OSTWALD, with his attractive way of presenting a subject, hardly needs an introduction to an American scientific audience, following his recent extensive lecture tour in this country. The translator says "WOLFGANG OSTWALD'S writings represent in colloid chemistry what those of CHARLES GERHARDT represent in organic, JUSTUS LIEBIG in agricultural, and WILHELM OSTWALD in physical chemistry." Notwithstanding the fact that many phases of the subject of greatest interest to physiologists are still to be treated in the second half, the volume is a much-needed reference book for plant workers.

TAYLOR'S<sup>3</sup> book upon colloids is a far less exhaustive statement, but offers a good general outline of the subject. Part I (163 pp.) deals with general properties of colloids; part II (56 pp.), with methods of preparation; part III (42 pp.), with surface phenomena or adsorption; and part IV (56 pp.), with applications of colloid chemistry (semi-colloids, dyeing, tanning, soil, purification of sewage, and applications to biology). Those interested only in the general principles of the subject will find this little book most satisfactory.

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<sup>2</sup> OSTWALD, WOLFGANG, A handbook of colloid chemistry. 1st Eng. ed. translated from 3d Ger. ed. by MARTIN H. FISCHER, with the assistance of R. E. OESPER and L. BERMAN. 8vo. pp. xii+278. Philadelphia: P. Blakiston's Son & Co. 1915. \$3.00.

<sup>3</sup> TAYLOR, W. W., The chemistry of colloids and some technical applications. pp. vi+328. New York: Longmans, Green, & Co. 1915. \$2.00.

The reviewer, however, feels that there is no other statement on colloids so significant and helpful to biologists as the chapters dealing with this and related topics in HÖBER'S<sup>4</sup> work (chaps. vi, vii, and many points in later chapters).—WM. CROCKER.

### An elementary textbook

The textbooks of botany for elementary students are multiplying so rapidly that every conceivable method of presentation will soon be available. It is no longer a question as to the facts to be presented, but as to the method of presentation. An interesting organization of the fundamental facts of botany for the benefit of elementary students is the recent text by THODAY,<sup>5</sup> who says that the book is intended primarily for use in connection with the "Senior Cambridge local examinations." No previous knowledge of botany is assumed, so that the presentation is intended to be strictly elementary.

Without questioning the facts, the interesting feature of the book is its testimony as to the requirements in botany in the examinations referred to. The book is divided into five sections, whose titles sufficiently indicate the contents. After an introductory chapter, pointing out such conspicuous organs of plants as may be shown by a comparison of sunflower, grass, dandelion, and horse-chestnut, the first section deals with "The functions of plant organs" and "The food of plants." The first contact, therefore, is physiological, before any knowledge of structure has been developed. This follows in the second section, under the title "Form and structure," which is an outline of anatomy. The third section bears the title "Reproduction," but it is merely reproduction by seed plants, dealing with flowers, fruits, seeds, and germination. "The classification of plants" is the title of the fourth section, and this also is restricted to seed plants. The principal chapter is entitled "Evolution and the principles of classification as illustrated by the buttercup family." This section is really an introduction to some of the important families of angiosperms. The last section is ecological, under the title "Plants in relation to their environment," the five chapter headings illustrating the treatment as follows: fitness, trees, climbing plants, water plants, the distribution of plants and the factors which govern it.

The notable feature of the book, aside from the order of presentation, is the elimination of all plants except flowering plants. It is not a question as to the importance or unimportance of the cryptogams, but as to any intelligent appreciation of flowering plants apart from some perspective of the plant kingdom as a whole.—J. M. C.

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<sup>4</sup> HÖBER, R., *Physikalische Chemie der Zelle und das Gewebe*. pp. xviii+808. Berlin: Wilhelm Englemann. 1914. \$5.50.

<sup>5</sup> THODAY, D., *Botany; a textbook for senior students*. 8vo. pp. xvi+474. figs. 205. Cambridge: University Press. 1915. 5s. 6d.